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EXAMINER
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ART UNIT	PAPER NUMBER
2457	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/821,791	KODEBOYINA, CHAITANYA	
	Examiner	Art Unit	
	MICHAEL C. LAI	2457	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 November 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29,31-38 and 40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-29, 31-38, 40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is responsive to communications filed on 11/25/2009. Claims 1-29, 31-38, and 40 have been examined.

Response to Amendment

2. The examiner has acknowledged the amended claims 1, 8, 12, 24, 34, 38, 40, and cancelled claims 30, 39. The objections to the specification and claims 8 and 34 have been corrected and withdrawn accordingly. The 112 first paragraph rejection to claims 1, 10, 12, 24, 34, and 40 has been addressed and withdrawn accordingly. The 112 second paragraph rejections to claims 24, 34, 37 have been corrected and withdrawn accordingly. The 112 second paragraph rejection to claim 40 has not been corrected, therefore the rejection is maintained. Claims 1-29, 31-38, and 40 are pending.

Response to Arguments

3. In the prior Office action, the examiner had objected to claims 38 and 39. The applicant has then amended claim 38 to include all subject matter recited by the base claim 1, and has amended independent claims 12 and 34 to include the subject matter of allowable claim 38. The applicant has also canceled claim 39 and has incorporated the limitations of claim 39 into independent claims 1 and 24. After a further review of claims 1, 12, 24, 34, and 38, and after an updated search, the Examiner is therefore obliged to apply an art rejection for claims and its dependent claims based on the prior applied references and the newly applied prior art as found below. The applicant's arguments are moot in view of the

newly applied rejection. The examiner regrets the delayed prosecution of the application.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-29, 31-37, and 40 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 1 recites the limitation of "…wherein the first device **continuously** outputs the routing communications as the MAC address state information is **learned by the first device**…" which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 24 and 40 recite the similar limitation and are rejected for the same reason as for claim 1. All dependent claims are necessarily rejected as being dependent upon the rejected independent claims.

Claim 12 recites the limitation of "…wherein **the first routing protocol** processes the L2 service information by injecting the L2 service information into stored route information and resolving the route information to associate routes

associated with the injected L2 service information with respective next-hops…" which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Note that the specification describes in paragraph 0046 "Router 50 receives the VPLS service information, and **control unit 58** processes the VPLS service information **in accordance with** BGP protocol 60C by injecting the VPLS service information into route information 63. Control unit 58 resolves route information 63 and associates all of the routes, including the recently injected L2 information, with respective next-hops." The L2 service information can be processed **in accordance with** the first routing protocol, but not processed by the protocol.

Claim 34 recites the similar limitation and is rejected for the same reason as for claim 12. All dependent claims are necessarily rejected as being dependent upon the rejected independent claims.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1, 24, 34, 38, 40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is important to note that independent claims 1, 24, 34, and 38 are replete with intended use recitations, "wherein" clauses. "Wherein" clauses is a language that suggests or make optional but does not require steps to be

performed or does not limit a claim to a particular structure does not limit the scope of a claim or claim limitation. See MPEP 2106.

Claim 40 recites the limitation "the second customer network" in line 9. However, claim 40 recites the limitation “a second customer network” in both lines 3-4 and line 7. It is unclear which second customer network the limitation in line 12 is referring to.

Claim Rejections - 35 USC § 101

8. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

9. Claims 34-37 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 34-37 recite the limitation of “computer-readable medium” in line 1. The broadest reasonable interpretation of a claim drawn to a computer readable medium typically covers forms of non-transitory tangible media and transitory propagating signals *per se* in view of the ordinary and customary meaning of computer readable media, particularly when the specification is silent. *See* MPEP 2111.01. These claims are rejected because the claimed invention is directed to non-statutory subject matter. Suggestion: use “non-transitory computer readable storage medium”.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 1-3, 5-14, 16-26, 28-29, 31-38, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanderson et al. (US *20040223500* A1, hereinafter Sanderson), and in view of Kompella et al. (Non-Patent Literature - Virtual Private LAN Services over MPLS, "draft-ietf-ppvpn-vpls-ldp-00.txt", hereinafter Kompella).

Regarding claim 1, Sanderson discloses a method comprising:

establishing a peering session between a first device associated with a first customer network and a second device associated with a second customer network using a first routing protocol [para. 0091, 0135, EBGP];

establishing a label switched path (LSP) through plurality of intermediate networks communicatively coupled between a first customer network and a second customer network [para. 0133, 0137];

after establishing the peering session and the LSP, communicating layer two (L2) service information over the peering session using the first routing protocol between the first device associated with the first customer network and the second device associated with the second customer network wherein communicating the L2 service information using the first routing protocol

comprises the first device outputting a routing communication in accordance with the first routing protocol [para. 0135-0136]; and

providing an L2 service in accordance with the L2 service information to transport L2 communications between the first customer network and the second customer network through the plurality of intermediate networks using the LSP [para. 0162].

Sanderson discloses the claimed invention except for wherein the routing communication includes the L2 service information, and wherein the L2 service information comprises Media Access Control (MAC) address state information for devices in the first customer network, wherein the first device continuously outputs the routing communications as the MAC address state information is learned by the first device. However, Kompella discloses a virtual private LAN service (VPLS) solution over MPLS, also known as Transparent LAN Services (TLS). A VPLS creates an emulated LAN segment for a given set of users. It delivers a **layer 2 broadcast** domain that is fully capable of **learning and forwarding** on Ethernet MAC addresses that is closed to a given set of users. Many VPLS services can be supported from a single PE node [see abstract]. Kompella, indeed discloses the limitation of routing protocol includes the L2 service information, and wherein the L2 service information comprises Media Access Control (MAC) address state information for devices in the first customer network. It would have been obvious to a person with ordinary skill in the art at the time the invention was made to incorporate Kompella's teaching into Sanderson's method for the purpose of facilitating interconnections among heterogeneous layer 2 virtual private network applications by including the L2 service information in the routing communication protocol and wherein the L2 service information comprises Media Access Control (MAC) address state information, thereby providing connectivity between geographically dispersed

customer sites across MAN/WAN network(s), as if they were connected using a LAN.s [Section 4, second paragraph].

Regarding claim 2, Sanderson further discloses wherein establishing an LSP comprises exchanging label information associated with the LSP between the plurality of intermediate networks using a second routing protocol that has been extended to distribute the label information [para. 0135-0140, BGP].

Regarding claim 3, Sanderson further discloses wherein the second routing protocol carries the label information in association with routes advertised between the intermediate networks [para. 0088].

Regarding claim 5, Sanderson further discloses wherein the second routing protocol comprises the Border Gateway Protocol (BGP) [para. 0135-0140, BGP].

Regarding claim 6, Sanderson further discloses wherein the label information conforms to one of Multi-protocol Label Switching (MPLS) or the Label Distribution Protocol (LDP) [para. 0165].

Regarding claim 7, Sanderson further discloses wherein the first routing protocol is the same as the second routing protocol [para. 0135-00140, EBGP, IBGP].

Regarding claim 8, Sanderson further discloses wherein communicating the L2 service information using the first routing protocol comprises communicating the L2 service information between the first device and the second device using an exterior routing protocol [para. 0090, EBGP].

Regarding claim 9, Sanderson further discloses:

wherein communicating L2 service information comprises communicating the L2 service information using an intermediate route relay device [para. 0079, PE routers],

wherein the L2 service information includes information for L2 sites or end-points within the second customer network and next hop information used to reach these L2 sites or end-points from the first customer network [para. 0168-0169], and

wherein the method includes configuring the intermediate route relay device to maintain and relay the next hop information unchanged via the exterior routing protocol [para. 0155].

Regarding claims 10, 21, and 32, Sanderson discloses the claimed invention except for the VPLS and Ethernet. However, Kompella discloses a virtual private LAN service (VPLS) solution over MPLS, also known as Transparent LAN Services (TLS). A VPLS creates an emulated LAN segment for a given set of users. It delivers a layer 2 broadcast domain that is fully capable of learning and forwarding on **Ethernet** MAC addresses that is closed to a given set of users. Many VPLS services can be supported from a single PE node [see abstract]. It would have been obvious to a person with ordinary skill in the art at the time the invention was made to incorporate Kompella's teaching into Sanderson's method for the purpose of facilitating interconnections among heterogeneous layer 2

virtual private network applications by including the Virtual Private LAN Service for the L2 service and Ethernet communications for the L2 communications, thereby providing connectivity between geographically dispersed customer sites across MAN/WAN network(s), as if they were connected using a LAN.s [Section 4, second paragraph].

Regarding claim 11, Sanderson further discloses wherein providing an L2 service comprises:

receiving L2 communications from the first customer network [para. 0139, ingress LSP]; and

assigning labels to the L2 communications from the first customer network in accordance with the label information to form packets for transporting the L2 communications from the first customer network to the second customer network [para. 0139, inner label].

Regarding claim 12, Sanderson discloses a device comprising:

one or more interface cards configured to communicate packets via input links and output links; [para. 0051]

a routing process that receives label information for a label switched path (LSP) through plurality of intermediate networks communicatively coupled between a first customer network and a second customer network, wherein

the routing process receives the label information from packets received by the one or more interface cards [para. 0133, 0137];

a first routing protocol that establishes a peering session between the device and a second device associated with the second customer network [para. 0135-0136], and receives layer two (L2) service information associated with the second customer network by receiving a routing communication over the peering session that includes the L2 service information [para. 0135-0136]; and

an L2 service that operates in accordance with the L2 service information and transports L2 communications between the first customer network and the second customer network through the plurality of intermediate networks in accordance with the label information by outputting the L2 communications via the output links of the one or more interface cards [para. 0162].

Sanderson discloses the claimed invention except for wherein the L2 service information comprises Media Access Control (MAC) address state information for devices in the first customer network, wherein the first routing protocol processes the L2 service information by injecting the L2 service information into stored route information and resolving the route information to associate routes associated with the injected L2 service information with respective next-hops. However, Kompella discloses a virtual private LAN service (VPLS) solution over MPLS, also known as Transparent LAN Services (TLS). A VPLS creates an emulated LAN segment for a given set of users. It delivers a **layer 2 broadcast** domain that is fully capable of learning and forwarding on Ethernet MAC addresses that is closed to a given set of users. Many VPLS services can be supported from a single PE node [see abstract]. Kompella, indeed discloses the limitation of routing protocol includes the L2 service information, and wherein the L2 service information comprises Media Access Control (MAC) address state information for devices in the first customer network. Kompella further discloses When a new MAC address is learned on an inbound VC LSP, it needs to be associated with the outbound VC LSP that is part of the same pair [Section 5.2, second paragraph]. This is equivalent to injecting the L2 service information into stored route information and resolving the route information to associate routes associated with the injected L2 service information with respective next-hops. It would have been obvious to a person with ordinary skill in the art at the time the invention was made to incorporate Kompella's teaching into Sanderson's method

for the purpose of providing connectivity between geographically dispersed customer sites across MAN/WAN network(s), as if they were connected using a LAN.s [Section 4, second paragraph].

Regarding claim 13, Sanderson further discloses wherein the routing process receives the label information through the plurality of intermediate networks via a second routing protocol that has been extended to distribute the label information [para. 0135-0140, BGP].

Regarding claim 14, Sanderson further discloses wherein the second routing protocol carries the label information in association with routes advertised between the plurality of intermediate networks [para. 0088].

Regarding claim 16, Sanderson further discloses wherein the second routing protocol comprises the Border Gateway Protocol (BGP) [para. 0135-0140, BGP].

Regarding claim 17, Sanderson further discloses wherein the first routing protocol is the same as the second routing protocol [para. 0135-00140, EBGP, IBGP].

Regarding claim 18, Sanderson further discloses wherein the label information conforms to one of Multi-protocol Label Switching (MPLS) or the Label Distribution Protocol (LDP) [para. 0165].

Regarding claim 19, Sanderson further discloses wherein the device receives the L2 service information from the second device associated with the second customer network via an exterior routing protocol [para. 0090, EBGP].

Regarding claim 20, Sanderson further discloses:

wherein the L2 service information includes information for L2 sites or end-points in the second customer network and next hop information used by the device to reach these remote L2 sites or end-points [para. 0079, PE routers],

wherein the device is configured relay the next hop information unchanged using the exterior routing protocol when the device receives the L2 service information and the next hop information via an intermediate route relay device [para. 0155, 0168-0169].

Regarding claim 22, Sanderson further discloses wherein the L2 service receives L2 communications from the first customer network [para. 0139, ingress LSP], and assigns labels to the L2 communications from the first customer network in accordance with the label information to form packets for transporting the L2 communications from the first customer network to the second customer network through the plurality of intermediate networks via the LSP [para. 0139, inner label].

Regarding claim 23, Sanderson further discloses wherein the device comprises a provider edge router or a customer edge router [para. 0133, 0137].

Regarding claim 24, Sanderson discloses a system comprising:

a border router that establishes a label switched path (LSP) through a plurality of intermediate networks, wherein the LSP communicatively couples a first customer network and a second customer network [para. 0133, 0137];

a first route reflector associated with the first customer network that establishes a peering session between the first route reflector and a second route reflector associated with the second customer network using an exterior routing protocol, and communicates layer two (L2) service information with the second route reflector associated with the second customer network via routing communications that conform to the exterior routing protocol, wherein the routing communications include the L2 service information [para. 0135-0136]; and

an edge router that provides an L2 service to the first customer network in accordance with the L2 service information to transport L2 communications between the first customer network and the second customer network through the plurality of intermediate networks using the LSP [para. 0162].

Sanderson discloses the claimed invention except for wherein the routing communication includes the L2 service information, and wherein the L2 service information comprises Media Access Control (MAC) address state information for devices in the first customer network, and wherein the first route reflector continuously outputs the routing communications as the MAC address state information is learned by the first route reflector. However, Kompella discloses a virtual private LAN service (VPLS) solution over MPLS, also known as Transparent LAN Services (TLS). A VPLS creates an emulated LAN segment for a given set of users. It delivers a **layer 2 broadcast** domain that is fully capable of learning and forwarding on Ethernet MAC addresses that is closed to a given

set of users. Many VPLS services can be supported from a single PE node [see abstract]. Kompella, indeed discloses the limitation of routing protocol includes the L2 service information, and wherein the L2 service information comprises Media Access Control (MAC) address state information for devices in the first customer network. It would have been obvious to a person with ordinary skill in the art at the time the invention was made to incorporate Kompella's teaching into Sanderson's method for the purpose of facilitating interconnections among heterogeneous layer 2 virtual private network applications by including the L2 service information in the routing communication protocol and wherein the L2 service information comprises Media Access Control (MAC) address state information, thereby providing connectivity between geographically dispersed customer sites across MAN/WAN network(s), as if they were connected using a LAN.s [Section 4, second paragraph].

Regarding claim 25, Sanderson further discloses wherein the border router establishes the LSP by exchanging label information associated with the LSP between the plurality of intermediate networks using a routing protocol [para. 0135-0140, BGP].

Regarding claim 26, Sanderson further discloses wherein the routing protocol has been redefined to carry the label information in association with routes advertised between the intermediate networks [para. 0088].

Regarding claim 28, Sanderson further discloses wherein the routing protocol comprises the Border Gateway Protocol (BGP) [para. 0135-0140, BGP].

Regarding claim 29, Sanderson further discloses wherein the label information conforms to one of Multi-protocol Label Switching (MPLS) or the Label Distribution Protocol (LDP) [para. 0165].

Regarding claim 31, Sanderson further discloses:

wherein the L2 service information specifies one or more L2 sites or end-points in the second customer network and includes next hop information used to reach these L2 sites or end-points from the first customer network [para. 0079, PE routers],

wherein the first and second route reflectors are configured to maintain and relay the next hop information unchanged upon receiving the next hop information via the exterior routing protocol [para. 0155, 0168-0169].

Regarding claim 33, Sanderson further discloses wherein the edge router provides an L2 service by receiving L2 communications from the first customer network [para. 0139, ingress LSP], and assigning labels to the L2 communications from the first customer network in accordance with the label information to form packets for transporting the L2 communications from the first customer network to the second customer network through the plurality of intermediate networks via the LSP [para. 0139, inner label].

Regarding claim 34, Sanderson discloses a computer-readable medium comprising instructions to cause a processor to:

execute a routing process that receives label information for a label switched path (LSP) through a plurality of intermediate networks communicatively coupled between a first customer network and a second customer network, wherein the label information is received using the routing process by receiving a routing communication that conforms to a first routing protocol and that includes the label information [para. 0133, 0137]; and

execute a layer two (L2) service that receives L2 service information associated with the second customer network using the first routing protocol [para. 0135-0136], and

transports L2 communications between the first customer network and the second customer network through the plurality of intermediate networks in accordance with the MAC address state information using the LSP to emulate L2 connectivity across the intermediate networks [para. 0162].

Sanderson discloses the claimed invention except for wherein the L2 service information comprises Media Access Control (MAC) address state information for devices in the first customer network, wherein the first routing protocol processes the L2 service information by injecting the L2 service information into stored route information and resolving the route information to associate routes associated with the injected L2 service information with respective next-hops. However, Kompella discloses a virtual private LAN service (VPLS) solution over MPLS, also known as Transparent LAN Services (TLS). A VPLS creates an emulated LAN segment for a given set of users. It delivers a **layer 2 broadcast** domain

that is fully capable of learning and forwarding on Ethernet MAC addresses that is closed to a given set of users. Many VPLS services can be supported from a single PE node [see abstract]. Kompella, indeed discloses the limitation of routing protocol includes the L2 service information, and wherein the L2 service information comprises Media Access Control (MAC) address state information for devices in the first customer network. Kompella further discloses When a new MAC address is learned on an inbound VC LSP, it needs to be associated with the outbound VC LSP that is part of the same pair [Section 5.2, second paragraph]. This is equivalent to injecting the L2 service information into stored route information and resolving the route information to associate routes associated with the injected L2 service information with respective next-hops. It would have been obvious to a person with ordinary skill in the art at the time the invention was made to incorporate Kompella's teaching into Sanderson's method for the purpose of providing connectivity between geographically dispersed customer sites across MAN/WAN network(s), as if they were connected using a LAN.s [Section 4, second paragraph].

Regarding claim 35, Sanderson further discloses

wherein the routing process receives the label information through the plurality of intermediate networks via a second routing protocol [para. 0135-0140, BGP], and

wherein the second routing protocol carries the label information in association with routes advertised between the plurality of intermediate networks [para. 0088].

Regarding claim 36, Sanderson further discloses wherein the second routing protocol comprises the Border Gateway Protocol (BGP) [para. 0135-0140, BGP].

Regarding claim 37, Sanderson further discloses wherein the first routing protocol is the same as the second routing protocol [para. 0135-00140, EBGP, IBGP].

Regarding claim 38, Sanderson discloses a method comprising:

establishing a peering session between a first device associated with a first customer network and a second device associated with a second customer network using a first routing protocol [para. 0091, 0135, EBGP];

establishing a label switched path (LSP) through plurality of intermediate networks communicatively coupled between a first customer network and a second customer network [para. 0133, 0137];

after establishing the peering session and the LSP, communicating layer two (L2) service information over the peering session using the first routing protocol between the first device associated with the first customer network and the second device associated with the second customer network wherein communicating the L2 service information using the first routing protocol

comprises the first device outputting a routing communication in accordance with the first routing protocol [para. 0135-0136]; and

providing an L2 service in accordance with the L2 service information to transport L2 communications between the first customer network and the second customer network through the plurality of intermediate networks using the LSP [para. 0162].

Sanderson discloses the claimed invention except for wherein the L2 service information comprises Media Access Control (MAC) address state information for devices in the first customer network, and processing the L2 service information with the second device using the first routing protocol by injecting the L2 service information into stored route information and resolving the route information to associate routes associated with the injected L2 service information with respective next-hops. However, Kompella discloses a virtual private LAN service (VPLS) solution over MPLS, also known as Transparent LAN Services (TLS). A VPLS creates an emulated LAN segment for a given set of users. It delivers a **layer 2 broadcast** domain that is fully capable of learning and forwarding on Ethernet MAC addresses that is closed to a given set of users. Many VPLS services can be supported from a single PE node [see abstract]. Kompella, indeed discloses the limitation of routing protocol includes the L2 service information, and wherein the L2 service information comprises Media Access Control (MAC) address state information for devices in the first customer network. Kompella further discloses When a new MAC address is learned on an inbound VC LSP, it needs to be associated with the outbound VC LSP that is part of the same pair [Section 5.2, second paragraph]. This is equivalent to injecting the L2 service information into stored route information and resolving the route information to associate routes associated with the injected L2 service information with respective next-hops. It would have been obvious to a person with ordinary skill in the art at the time the invention was made to incorporate

Kompella's teaching into Sanderson's method for the purpose of providing connectivity between geographically dispersed customer sites across MAN/WAN network(s), as if they were connected using a LAN.s [Section 4, second paragraph].

Regarding claim 40, Sanderson discloses a system comprising:

a border router that establishes a label switched path (LSP) through a plurality of intermediate networks, wherein the LSP communicatively couples a first customer network and a second customer network [para. 0133, 0137];

a first route reflector associated with the first customer network that establishes an Exterior Border Gateway Protocol (EBGP) peering session between the first route reflector and a second route reflector associated with a second customer network using the EBGP, and communicates layer two (L2) service information over the EBGP peering session with the second route reflector associated with the second customer network [para. 0135-0136]; and

an edge router that provides a Virtual Private LAN Service to the first customer network in accordance with the L2 service information to emulate L2 connectivity by transporting Ethernet communications between the first customer network and the second customer network through the plurality of intermediate networks using the LSP [para. 0162].

Sanderson discloses the claimed invention except for the L2 service information is learned by continuously outputting EBGP routing communications

that include the L2 service information, and wherein the L2 service information comprises Media Access Control (MAC) address state information for devices in the first customer network. However, Kompella discloses a virtual private LAN service (VPLS) solution over MPLS, also known as Transparent LAN Services (TLS). A VPLS creates an emulated LAN segment for a given set of users. It delivers a **layer 2 broadcast** domain that is fully capable of learning and forwarding on Ethernet MAC addresses that is closed to a given set of users. Many VPLS services can be supported from a single PE node [see abstract]. Kompella, indeed discloses the limitation of routing protocol includes the L2 service information, and wherein the L2 service information comprises Media Access Control (MAC) address state information for devices in the first customer network. It would have been obvious to a person with ordinary skill in the art at the time the invention was made to incorporate Kompella's teaching into Sanderson's method for the purpose of facilitating interconnections among heterogeneous layer 2 virtual private network applications by including the L2 service information in the routing communication protocol and wherein the L2 service information comprises Media Access Control (MAC) address state information, thereby providing connectivity between geographically dispersed customer sites across MAN/WAN network(s), as if they were connected using a LAN.s [Section 4, second paragraph].

12. Claims 4, 15, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanderson and Kompella as applied to claim 1, and further in view of Bragg (US 7,286,479 B2, hereinafter Bragg).

Regarding claims 4, 15, and 27, Sanderson and Kompella disclose the claimed invention except for the network layer reachability information (NLRI). Bragg teaches exchange of network level reachability information (NLRI) encoded as address prefixes [col. 1, lines 26-33]. It would have been obvious to a person with ordinary skill in the art at the time the invention was made to incorporate Bragg's teaching into Sanderson's and Kompella's method for the purpose of sharing with other autonomous systems a common view of addressing and routing by exchanging network level reachability information (NLRI, encoded as address prefixes), thereby routing between autonomous systems is established and maintained [col. 1, lines 28-33].

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Applicant is reminded that in amending in response to a rejection of claims, the patentable novelty must be clearly shown in view of the state of the art disclosed by the references cited and the objection made. Applicant must show how the amendments avoid such references and objections. See 37 CFR 1.111(c).

14. Ngo et al., US 2005/0213513 A1, has taught full mesh LSP and full mesh Y-LDP provisioning between provider edge routers in support of layer-2 virtual private network services.
15. Bryden et al., US 7,221,675 B2, has taught an address resolution method for a virtual private network, and customer edge device for implementing the method.

Examiner's Note: Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

In the case of amending the claimed invention, Applicant is respectfully requested to indicate the portion(s) of the specification which dictate(s) the structure relied on for proper interpretation and also to verify and ascertain the metes and bounds of the claimed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL C. LAI whose telephone number is (571)270-3236. The examiner can normally be reached on M-F 8:30 - 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ario Etienne can be reached on (571) 272-4001. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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